

Urinary tract infection complicating a total buried glans penis after traditional circumcision: a case report

Abstract

Context: Traditional circumcision in early childhood is common in the Republic of Benin. This practice can be complicated by infection, hemorrhage and pathological scarring.

Presentation of the case: We describe here a case of multiple complications made up of urinary tract infection, total buried glans penis and probable severe iron deficiency anemia in a 12-month-old subject, traditionally circumcised at 10 months of age by an unqualified agent, admitted in hospitalization for severe dysuria. The evolution under medical and surgical treatment was favorable.

Conclusion: This case highlights the need to perform circumcisions by qualified health workers and in adequately nourished children.

Keywords: urinary tract infection on buried glans penis, Benin

Volume 14 Issue 2 - 2024

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Received: June 04, 2024 | **Published:** June 18, 2024

Introduction

Circumcision in early childhood is common in Benin. According to the World Health Organization and Wilcken et al, approximately 30% of male children are circumcised worldwide. In Africa, the proportion of circumcised male subjects varies from 14% in Uganda to 98% in Madagascar.^{1,2} In Benin, this proportion is around 90% as in Nigeria.³ In rural areas, it is often traditionally carried out by unauthorized agents with apparently septic equipment and unsuitable techniques, thus exposing children to multiple complications. Buried glans penis due to poor healing according to the classification of Maizels⁴ is one of these complications for which we will present and comment on a case.

The objective was to describe this clinical case with the aim of sharing experience and discussing prevention measures.

Medical observation

SKM is a 12-month-old male infant of farmer parents, living approximately 70 km from the city of Parakou (Benin), in the municipality of N'DALI. He was admitted on 04/04/2023 at 1:15 a.m., in the pediatric department of the Regional Teaching Hospital of Borgou and Alibori (CHUD-B/A). He was brought by his parents for dysuria.

The interrogation made it possible to note:

- 1) An onset dating back to 04 days before admission;
- 2) A notion of drop-by-drop urination accompanied by crying;
- 3) A notion of traditional circumcision at the age of 10 months by a retired and unqualified nurse assistant with an individual razor blade purchased commercially;
- 4) The time elapsed between circumcision and the appearance of symptoms was 2 weeks;
- 5) Poor dietary habits: breastfeeding 6 hours after birth, exclusive breastfeeding until the age of 2 months, followed by introduction of drinking water from 2 to 6 months then sorghum porridge, herbal tea and family meals from 6 months until the day of admission;

- 6) A lack of iron supplementation;
- 7) A lack of vitamin A supplementation;
- 8) A notion of geophagy;
- 9) An absence of deworming.

The initial physical examination found:

- a) A good general condition;
- b) Vital signs made up of temperature at 36.9°C, pulse at 164 beats per minute (tachycardia), respiratory rate at 39 cycles per minute, oxygen saturation at 98% in ambient air;
- c) Anthropometric parameters made up of weight at 8720g, height at 77cm, weight-for-height index at -1.5 standard deviation (risk of acute malnutrition according to the adapted who classification),⁵ mid-upper arm circumference at 145mm;
- d) A severe palmar pallor;
- e) A good respiratory status;
- f) A good hemodynamic status;
- g) A good state of consciousness;

The examination of the external genitalia carried out by the pediatric surgeon demonstrated:

- 1) A punctiform orifice centered on the circumcision scar, presenting fibrosis in front of the glans penis and covering almost the entire glans;
- 2) A sheath of the penis increased in volume (more than 3 times larger than normal size);
- 3) Pressure from the sheath which causes urine to flow.

At the end of the physical examination, the diagnosis of buried glans penis after traditional circumcision, complicated by probable urinary tract infection and anemia was established.

The following additional examinations were requested:

The cytobacteriological examination of urine (CBEU) with antibiogram made it possible to find:

- a) Leukocytes > 10⁶/ml
- b) Types of crystals: none
- c) Other elements: a few granular casts and rare isolated cells
- d) Epithelial cells: a few
- e) Gram: presence of numerous gram-negative bacilli (B-)
- f) Culture: positive, identification and isolation of *Escherichia coli*
- g) Antibiogram
 - o **Sensitivity to:** cefepime, ertapenem, ceftazidime, ceftriaxone, amikacin;
 - o **Resistance to:** gentamicin, tazobactam/piperacillin, aztreonam, netilmicin, ampicillin, cotrimoxazole, vancomycin, amoxicillin/clavulanic acid, ticarcillin and cefixime.

These elements led to the conclusion of a urinary tract infection caused by *Escherichia coli* and sensitive to cefepime, ertapenem, ceftazidime, ceftriaxone and amikacin.

The complete blood count (CBC) revealed severe hypochromic microcytic anemia with leukocytosis and predominantly polynuclear neutrophils (Table 1)

1) Renal function was normal with:

- a) uremia at 0.12G/L;
- b) serum creatinine level at 0.16 mg/l

2) The blood ionogram was normal with:

- a) Na⁺: 141.4 mEq/L
- b) K⁺: 4.37 mEq/L
- c) Cl⁺: 107.1 mEq/L
- d) Na⁺: 141.4 mEq/L
- e) K⁺: 4.37 mEq/L
- f) Cl⁺: 107.1 mEq/L

3) Random venous blood sugar was normal at 1.03g/l**4) Rhesus blood group was B positive**

Diagnosis retained: buried glans penis after traditional circumcision, complicated by E coli causing urinary tract infection in the context of severe hypochromic microcytic anemia.

Treatment received**1) Medical treatment**

- a) Hospitalization;
- b) Venous access + sample for laboratory tests;
- c) Identical blood group and rhesus factor transfusion of a bag of packed red blood cells;
- d) Initiation of probabilistic antibiotic therapy consisting of ceftriaxone 50 mg/kg/12 h by slow intravenous injection while awaiting the results of CBEU;

Under this treatment, the evolution was marked by an improvement in dysuria and an improvement in the hemoglobin level from 5.1G/dL to 8.2G/dL.

The blood count control carried out on 04/07/2023 revealed moderate hypochromic microcytic anemia with lymphocytosis (Table 1).

2) Surgical treatment

The infant subsequently benefited from a pre-anesthetic consultation and a validated pre-operative assessment allowing surgical treatment. He was then taken to the operating room for glans penis unburying with additional circumcision.

The operating report is as follows:

Under general anesthesia and orotracheal intubation,

- 1) Patient in supine position
- 2) Preliminary toilet with red Betadine
- 3) Drying + brushing + sterile draping
- 4) Cross incision at the level of the scar
- 5) Dissection and hemostasis step by step of the fibrosis
- 6) Discovery of retractile fibrosis on the ventral surface of the glans facing the urethra
- 7) Resection of all the fibrosis surrounding the glans to highlight it. This made it possible to unbury the glans and thus increase the urinary stream and flow.
- 8) Retractable fibrosis is discovered on the dorsal surface of the glans, opposite the path of the urethra which has been dissected.
- 9) Resection of excess skin and mucocutaneous suture then dressing.

Postoperative care was carried out:

- 1) Continuation of ceftriaxone 50mg/kg every 12 hours;
- 2) Paracetamol syrup dose of 15 mg/kg every 6 hours for 48 hours;
- 3) Intravenous infusion of saline 0.9% 500mL and glucose serum 10% 500mL in 24 hours;
- 4) Total enteral nutrition upon awakening.

The postoperative course was simple.

He was authorized 4 days after the operation to be discharged under: ferrous fumarate and dressing of the operating wound with aqueous eosin.

He was seen again by appointment two months after his admission on 06/04/2023.

The interrogation noted no complaints.

The physical examination showed:

- 1) A good general condition;
- 2) Normal anthropometric parameters: weight: 10.230kg; size: 77cm; Mid-upper arm circumference: 145mm;
- 3) Slight palmar pallor;
- 4) Normal external genitalia (see Figures 1–5)

CBEU and a blood count control were requested.



Figure 1 Image of the external genitalia on admission in a 12-month-old infant suffering from buried glans penis after circumcision. Source: Photo Library of the Pediatric Department, CHUD-B/A, 2023.



Figure 4 Image of the external genitalia at the end of a glans penis unburying procedure in a 12-month-old infant suffering from buried glans penis after circumcision; additional circumcision has been performed. Source: Photo Library of the Pediatric Department, CHUD-B/A, 2023.

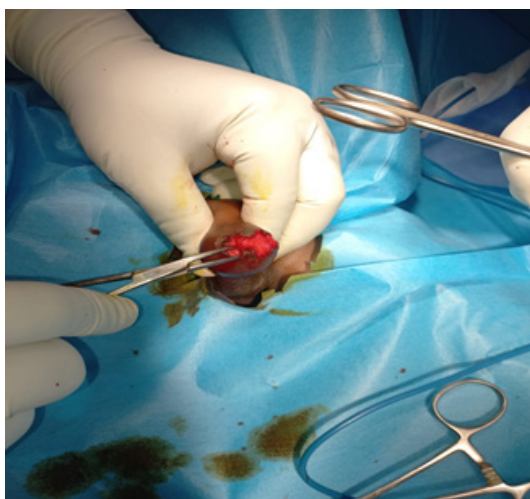


Figure 2 Image of the external genitalia at the start of a glans penis unburying procedure in a 12-month-old infant suffering from buried glans penis after circumcision. Source: Photo Library of the Pediatric Department, CHUD-B/A, 2023.



Figure 3 Image of the external genitalia in the middle of a glans penis unburying procedure in a 12-month-old infant suffering from buried glans penis after circumcision. Source: Photo Library of the Pediatric Department, CHUD-B/A, 2023.



Figure 5 Image of the external genitalia 6 weeks after the glans penis unburying procedure in a 12-month-old infant suffering from buried glans penis after circumcision. Source: Photo Library of the Pediatric Department, CHUD-B/A, 2023.

The CBEU was normal and the CBC concluded that there was a moderate normocytic hypochromic microcytic anemia (see Table 1).

He received treatment based on:

- 1) Syrup composed of ferrous fumarate, 50mg of elemental iron for 5mL, folic acid and vitamin C: 5mL every 12 hours for 3 months.
- 2) Spirulina powder: one teaspoon 3 times a day for 2 months.

Table 1 Initial hemogram and post-transfusion control of the patient aged 12 months, male, hospitalized in the Pediatrics department of CHUD-B/A in April 2023 (Source: archives of the medical records department)

Parameters	Initial CBC on April 4, 2023	CBC control after transfusion on April 7, 2023	CBC control on June 7, 2023
Red blood cells (T/L)	3.97	4.99	4.99
Hemoglobin (G/dL)	5.10	8.20	9.20
Hematocrit (%)	19.20	25.40	28.40
MCV (femtolitres)	48.40	50.90	60.70
MCHC (G/dL)	26.60	32.30	32.80
MCH (picograms)	12.80	16.40	18.45
Platelets (Giga/L)	338.00	230.00	280.00
White blood cells (Giga/L)	22.90	11.07	8.20
Polynuclear neutrophils in Giga/L (%)	15.12 (66%)	2.31 (20.90%)	3.35 (40.90%)
Lymphocytes in Giga/L (%)	6.42 (28%)	7.56 (68.30%)	3.96 (48.30%)
Polynuclear eosinophils in Giga/L (%)	0.46 (02%)	0.25 (2.30%)	0.20 (2.40%)
Polynuclear basophils in Giga/L (%)	0.00 (00%)	0.03 (0.30%)	0.02 (0.30%)
Monocytes in Giga/L (%)	0.90 (04%)	0.91 (8.20%)	0.66 (8.10%)

Discussion

Circumcision is the most frequent surgical procedure performed in the world.⁴ Its prevalence depends on geographic areas in relation to cultures, religions and health considerations.^{1,2} Having to be practiced by qualified health professionals to minimize complications, circumcision is subject to trivialization and as such, often practiced by ritualists for millennia. This results in complications both immediate (hemorrhage and infections) which can be life-threatening, and delayed (infectious, aesthetic and reproductive capacity). These frequent complications after traditional circumcisions,^{3,6-11} attributable to the technique used and the quality of care in most cases, can be linked to the constitution and condition of the circumcised subjects. This is how an unknown subject with hemophilia can bleed and be a victim of hemorrhagic complications after circumcision. In the same vein, subjects suffering from malnutrition, especially in its form described as "hidden hunger" in relation to micronutrient deficiencies, may be victims of poor post-circumcision healing or infectious complications due to immune deficiency in connection with micronutrient deficiencies.

Our patient had a health history of poor eating habits and geophagia. He had severe microcytic hypochromic anemia, most likely iron deficiency. This could be a probable cause of poor healing leading to a buried glans penis as reported by Javant et al in USA¹² and a disruption of urinary flow followed by urinary tract infection. Cases of dysuria on buried glans penis have been reported by Crowley et al in South Africa,¹³ Wilcken et al in a meta-analysis² and by Mohamed et al in Saudi Arabia.¹⁴ Preventing these complications could involve not only promoting circumcisions by qualified health workers but also better nutrition for children.

Conclusion

Buried glans penis is a rare complication but more observed in traditional and non-medicalized circumcisions. It can be the cause of urinary tract infection as in the case of this clinical observation. Promoting optimal nutrition for children could be a means of preventing this complication, apart from that relating to the performance of circumcision in medical facilities.

Declaration of authenticity of images

All images submitted have been generated by the authors who confirm that these images are original without duplication and they

have never been the subject of previous publication either in part or in whole.

Author's contributions

- 1) Conception and design: all authors
- 2) Administrative support: Noudamadjo A
- 3) Provision of study material: all authors
- 4) Data collection and gathering: Noudamadjo A, Dohou C, Hadonou AA
- 5) Writing of the manuscript: Noudamadjo A
- 6) Final approval of the manuscript: all authors

Acknowledgments

None.

Funding

None.

Conflicts of interest

The authors declare that there are no conflicts of interest.

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